

DOCUMENT Appendix II

**APPENDIX II:**

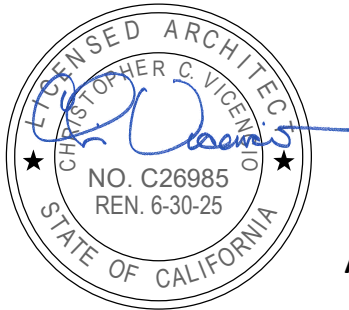
**HVAC AND ROOFING UPGRADES TECHNICAL SPECIFICATIONS PREPARED BY JK  
ARCHITECTURE ENGINEERING PROJECT #23-525**

**ALUM ROCK UNION SCHOOL DISTRICT**

**APPENDIX II: HVAC AND ROOFING  
UPGRADES TECHNICAL SPECIFICATIONS  
PREPARED BY JK ARCHITECTURE  
ENGINEERING PROJECT #23-525  
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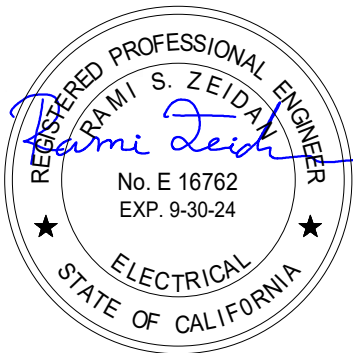
# PROJECT MANUAL

## ALUM ROCK UNION SCHOOL DISTRICT HVAC AND ROOFING UPGRADES



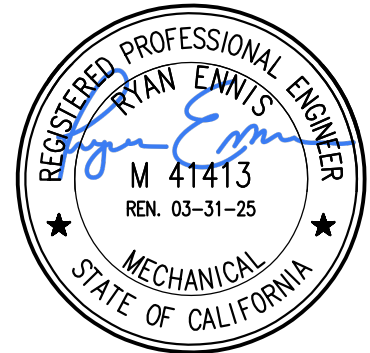
### Technical Specifications

ALUM ROCK UNION SCHOOL DISTRICT  
SAN JOSE, CALIFORNIA



3/11/24

JK Architecture Engineering  
Project Number # 23-525



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**SECTION 02 41 19**  
**SELECTIVE DEMOLITION**

**PART 1 - GENERAL**

1.1 SECTION INCLUDES

- A. General description of scope
  - 1. Demolition and removal of selected portions of buildings or structures.
    - a. Including but not limited to:
      - 1) Existing roofing replacement Building 100.
      - 2) HVAC upgrades at Superintendent Office Wing – Building 100
  - 2. Demolition and removal, disconnecting, capping and sealing, and abandoning in place of selected site elements.
  - 3. Salvage of existing items to be reused or recycled.
  - 4. Hazardous material remediation
  - 5. Abandoning in-place and/or removing below-grade construction.

1.2 RELATED SECTIONS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.
- B. Section 01 11 00 - Summary of Work - for use of the premises and phasing requirements
- C. Section 01 45 00 - Quality Control
- D. Section 01 50 00 - Temporary Facilities and Controls
- E. Section 01 50 13 - Construction Waste Management and Disposal
- F. Section 01 77 00 - Closeout Requirements

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

#### 1.4 STANDARDS AND REFERENCES (Current Edition for All Standards Listed)

- A. ASSE A10.6 – Safety and Health Program Requirements for Demolition Operations
- B. 40 CFR 82 – Protection of Stratospheric Ozone
- C. All applicable EPA notification regulations.
- D. All applicable OSHA regulations.
- E. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations
- F. Resilient Floor Covering Institute (RFCI) - Recommended Work Practices for the Removal of Resilient Floor Coverings

Website Link: <https://rikett.net/wp-content/uploads/2016/05/RFCI-Recommended-Work-Practices-for-the-Removal-of-Resilient-Flooring.pdf>

#### 1.5 SUBMITTALS

- A. Submittals: Provide submittals per Section 01 33 00, “Submittal”.
- B. Qualification Data: For refrigerant recovery technician.
- C. Engineering Survey: Submit engineering survey of condition of building.
- D. Proposed Protection Measures:
  - 1. Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property.
  - 2. Indicate proposed locations and construction of barriers.
  - 3. Adjacent Buildings: Where damage to adjacent structures is possible, detail special measures proposed to protect adjacent buildings to remain, including means of egress from those buildings.
- E. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
  - 2. Interruption of utility services: Indicate how long utility services will be interrupted.
  - 3. Coordination for shutoff, capping, and continuation of utility services.
  - 4. Use of elevator and stairs.
  - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- F. Building Demolition Plans: Drawings shall indicate the following:
  - 1. Locations of temporary protection, and means of egress protection, if applies, for adjacent occupied buildings.
- G. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of work.
- H. Pre demolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations.

1. Submit before the Work begins.
  2. Comply with Section 01 32 33, "Photographic Documentation.
- I. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.
- J. Closeout Submittals:
1. Submittals: Provide submittals per Section 01 77 00, "Closeout Requirements"
  2. Inventory: Submit a list of items that have been removed and salvaged.
  3. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

## 1.6 QUALITY ASSURANCE

1. Comply with ANSI A10.6 and NFPA 241.
2. Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
3. Comply with all OSHA regulations.
4. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

## 1.7 PRE-INSTALLATION CONFERENCE

- A. Pre-demolition Conference: Conduct conference at Project site.
1. Inspect and discuss condition of construction to be selectively demolished.
  2. Review structural load limitations of existing structure.
  3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
  5. Review areas where existing construction is to remain and requires protection.

## 1.8 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

## 1.9 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
1. Before selective demolition, Owner will remove the following items:
    - a. None.

- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

#### 1.10 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
  - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

#### 1.11 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
  - 1. None.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

### **PART 2 - PRODUCTS**

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

### **PART 3 - EXECUTION**

#### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
  - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
- E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- F. Survey of Existing Conditions: Record existing conditions by use of measured drawings
  - 1. Comply with requirements specified in Section 01 32 33, "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
  - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

### 3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

### 3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. Arrange to shut off utilities with utility companies.
  - 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
  - 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
    - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.

- b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
- c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
- d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
- e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
- g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

### 3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00, "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
  - 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

### 3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  5. Maintain fire watch during and for at least 1 hours after flame-cutting operations
  6. Maintain adequate ventilation when using cutting torches.
  7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  10. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19, "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
  2. Pack or crate items after cleaning. Identify contents of containers.
  3. Store items in a secure area until delivery to Owner.
  4. Transport items to Owner's storage area designated by Owner.
  5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
  2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  3. Protect items from damage during transport and storage.
  4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable,

protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

### 3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."
- F. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight.
  - 1. Remove existing roof membrane, flashings, copings, and roof accessories.
  - 2. Remove existing roofing system down to substrate.

### 3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site. Recycle or dispose of them according to Section 01 74 19, "Construction Waste Management and Disposal."
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  - 4. Comply with requirements specified in Section 01 50 13, "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

### 3.8 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

### 3.9 SELECTIVE DEMOLITION SCHEDULE

- A. See drawings for extent of demolition.

**END OF SECTION**

**SECTION 06 10 00**  
**ROUGH CARPENTRY**

**PART 1 - GENERAL**

1.1. GENERAL REQUIREMENTS

- A. The requirements of Division I apply to all Work of this Section.

1.2. SCOPE

- A. Provide all labor, materials, tools, facilities and equipment required for the fabrication and installation of rough carpentry and associated items (except that which is specified elsewhere) indicated on Drawings and necessary to complete the Work. Items include, but are not necessarily limited to, the following:
  - 1. Blocking, backing, stripping, furring, and nailers.
  - 2. Rough hardware.
  - 3. Wood framing.
  - 4. Plywood sheathing.
  - 5. Preservative treatment.
  - 6. Drilling, saw cuts, knock-outs and framing for ventilation.
  - 7. Wood sheathing backing at tile walls.

1.3. RELATED WORK

- A. See table of contents

1.4. QUALITY ASSURANCE

- A. General:
  - 1. Coordinate the work of all trades to ensure proper placement of all materials, anchors, etc., as well as providing for openings and anchors for the installation of surface mounted materials and equipment.
  - 2. Qualifications for Workmen: Provide sufficient skilled workmen and supervisors who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.

3. Rejection: In the acceptance or rejection of rough carpentry, no allowance will be made for lack of skill on the part of the workmen.

#### 1.5. STANDARDS AND REFERENCES: (Latest Edition Unless Otherwise Noted)

- A. 2022 California Building Code (CBC), with State of California Amendments.
- B. Lumber: West Coast Lumber Inspection Bureau (WCLIB); Standard Grading Rules for West Coast Lumber No. 17.
- C. Lumber: Western Wood Products Association (WWPA); Western Lumber Grading Rules 05.
- D. Redwood: Redwood Inspection Service (RIS); Standard Specifications for Grades of California Redwood Lumber.
- E. Plywood Sheathing: The Engineered Wood Association; Specifications and Grades.
  1. Structural Plywood: United States Product Standard PS1, Group 1 Douglas Fir.
  2. APA rated sheathing: United States Product Standard PS2.
- F. Wood Preservative: American Wood-Preservers' Association (AWPA):
  1. U1, Use Category System: User Specification for Treated Wood.
  2. M4, Standard for the Care of Preservative-Treated Wood Products.
- G. 2024 National Design Specification for Wood Construction (NDS).

#### 1.6. SUBMITTALS:

- A. Certification:
  1. Preservative Treated Wood: Certification for waterborne preservative and that moisture content was reduced to 19 percent maximum, after treatment.

#### 1.7. TESTS AND INSPECTIONS:

- A. A testing program is required prior to start of construction. Testing program to be done in Compliance with the 2022 CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
- B. If indicated on the Structural Drawings, load test expansion and epoxy anchors as indicated on the drawings.

#### 1.8. PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protection:

1. After delivery, store all materials off the ground, covered, and in such a manner as to ensure proper ventilation and drainage and to protect against damage and the weather. Maintain wood at the maximum moisture levels indicated in Materials Section.
2. Keep all material clearly identified with all grade marks legible; keep all damaged material clearly identified as damaged, and separately store to prevent its inadvertent use. Do not allow installation of damaged or otherwise non-complying material.
3. Use all means necessary to protect the installed work and materials of all other trades.
4. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Sawn Lumber:

1. Lumber (Wood Framing): Meet requirements of following minimum grades. All grades to WCLIB Grading Rules No. 17. Species shall be Douglas Fir – Larch

Maximum Moisture

<u>Item</u>	Sizes	Grade	Content at Initial Use	Notes
All Material	2x	No. 1	19%	Unless Noted Otherwise
All Material	3x, 4x	No. 1	19%	Unless Noted Otherwise
All Material	6x	No. 1	19%	Unless Noted Otherwise
Decking	2x	Select Dex	19%	Unless Noted Otherwise

2. “At initial use” shall be that point at which nails, screws, bolts, split rings, shear plates or other fasteners or the holes for said fasteners are placed in the wood.
3. All sawn lumber is assumed to be enclosed in the dry building envelope in the final service condition, unless noted otherwise, and free to dry to moisture content less than 19%.
4. The Contractor shall use whatever means necessary, including site drying to ensure that the moisture contents above are not exceeded.
5. All studs, plates, joists, rafters and beams 3x and thicker shall be free of heart center in accordance with the specified grading standards.

B. Plywood Sheathing:

1. Roof and Wall Structural Sheathing: PS1 and PS2 APA rated sheathing with exterior glue. Thickness type and grade shall be as indicated on Drawings.
2. Where indicated on the Architectural Drawings as interior wall backing behind tile and in all toilet rooms behind sheet rock, to be C-C APA rated sheathing with exterior glue. Thickness shall be 5/8-inch at all locations.
3. Flooring: C-C APA Performance rated tongue and groove with exterior glue. Thickness type and grade shall be as indicated on the Drawings.
4. Sheathing rated by agencies other than APA must be submitted for approval as a substitution.

C. Building Paper: Fed. Spec. UU-B-790a, Type I, Grade B (15 lb. min. unless noted elsewhere.).

D. Rough Hardware Fastenings and Connections: All types including bolts, lag screws, nails, spikes, screws, washers and other rough hardware, of kinds that may be purchased and that require no further fabrication, shall be furnished and installed for all finish and rough carpentry and shall conform to 2018 NDS Standards and dimensions. All hardware exposed to weather shall be hot-dipped galvanized per ASTM A153 Standards and CBC 2304.10.1.1. All nails used into pressure treated lumber shall be hot-dipped galvanized per ASTM A153 or stainless steel.

1. Common wire nails or spikes unless noted otherwise on the Drawings. Box nails and sinker nails are not permitted. Vinyl coating is permitted on nails when not exposed to weather.
2. Bolts: Bolt material shall conform to ASTM A307, Grade A. Bolt dimensions shall conform to ANSI/ASME B18.2.1 with hex head of sizes indicated.
3. Lag Screws: Lag screws shall conform to ASTM 307, Grade A. All lag screws shall have hex heads where exposed.
4. Washers: Standard flat washers shall conform to ANSI B18.22.1, Type A, Wide Pattern. Steel plate washers shall be Simpson BP or BPS or equivalent. Malleable iron washers shall be standard malleable iron washers.
5. Powder Driven Fasteners: Tempered steel pins with special corrosive resistant plating or coating. Pins shall have guide washers to accurately control penetration. Fastening shall be accomplished by low-velocity piston-driven power activated tool. Pins and tool shall be as manufactured by Hilti Fastening Systems or equivalent. See Drawings for size, type and embedment.
6. Expansion Anchors: See Section 03 30 00 for anchors to concrete and Section 04 20 00 for anchors to masonry.
7. Adhesive Anchors: See Section 03 30 00 for anchors to concrete and Section 04 20 00 for anchors to masonry.
8. Fabricated Metal Timber Framing Connectors: Connectors shall be punched for nailing and bolting. Nails and nailing shall conform to the manufacturer's instructions with a nail provided

for each punched hole. All connectors must have specific ICC approval. Types as noted on Drawings are Simpson Strong-Tie. Hardware suppliers other than Simpson shall submit a comparative material list itemizing product designation, load rating and supported member size for review by the enforcement agency and the Structural Engineer.

## 2.2 FABRICATION

### A. Lumber:

1. All lumber shall be air or kiln-dried to the maximum moisture content indicated in Materials Section.
2. Furnish S4S unless otherwise noted.
3. Size to conform to rules of governing standard. Sizes shown are nominal unless otherwise noted.

### B. Wood Treatment:

1. Preservative Treatment: The treating process and results thereof shall conform to the appropriate AWPA Standards for exterior, above ground use (3B) and as indicated in CBC Section 2303.1.9.
2. After treatment and prior to shipping, air or kiln-dry lumber to maximum 19 percent moisture content.
3. All treated wood shall be identified with a label meeting the requirements of CBC Section 2303.1.9.1.
4. The amount of preservative to be injected into the wood shall be as required by the AWPA standard for each type of installation.
5. All wood in contact with concrete or masonry shall be preservative treated.
6. Cut surfaces and bored holes in pressure treated wood shall be protected in accordance with AWPA Standard M4.

- C. Fire Treatment: All fire-retardant-treated wood shall be identified with a label meeting the requirements of CBC Section 2303.2.4. The treating process and results thereof shall meet the requirements of CBC Section 2303.2. Moisture content of fire-retardant-treated wood shall meet CBC Section 2303.2.8. Treater shall submit design and fastener values for treated wood to Structural Engineer for review. See Drawings for location of fire-retardant-treated wood.

## 2.3 SOURCE QUALITY CONTROL

### A. Grade Mark each piece of lumber. Marking must be done by recognized agency.

1. Douglas Fir shall bear WCLIB or WWPA grade stamp.

2. Pressure treated Douglas Fir shall bear AWPA Quality mark.
- B. Wood Sheathing: Each panel shall be legibly identified as to type, grade and specie by APA grade. If plies are spliced, the slope of the scarf shall not be steeper than 1:8. White pockets will not be permitted in face plies.

## **PART 3 - EXECUTION**

### **3.1 SURFACE CONDITIONS**

- A. Inspection:
1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly proceed.
  2. Verify that rough carpentry may be performed in strict accordance with the original design and all pertinent codes and regulations.
- B. Discrepancies: In the event of discrepancy, immediately notify Architect. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

### **3.2 WORKMANSHIP**

- A. General: All rough carpentry shall produce joints true, tight, and well nailed with all members assembled in accordance with the Drawings and with all pertinent codes and regulations.
- B. Selection of Lumber Pieces: Carefully select all members. Select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing or making proper connections. Cut out and discard all defects which will render a piece unable to serve its intended function.
- C. Lumber may be rejected by the Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.
- D. Shimming: do not shim any framing component.
- E. Care shall be taken that notching and boring of members is in strict conformance with the Drawings and that there are no over-cuts.

### **3.3 FASTENING**

- A. Nailing: Except as otherwise indicated on Drawings or specified, all nailing shall be as required by CBC Table 2304.10.1 - Fastening Schedule.
1. Nails or Spikes shall be common wire unless noted otherwise. Penetration of nails or spikes shall be one-half the length of the nail or spike into the piece receiving the point. However, to connect pieces 2" in thickness, 16d nails shall be used unless noted otherwise.

- a. Bore holes for nails wherever necessary to prevent splitting.
- b. Use finish or casing for finish work.
- c. Use of machine nailing is subject to a satisfactory installation of nails. Minimum edge distances shall be maintained. Nails installed through sheathing with nail guns shall not penetrate into the outer plies deeper than hand nailing. Submittal of guns and nails is required.
- d. All nailing into Pressure-Treated lumber shall utilize hot-dipped zinc coated galvanized nails or stainless-steel nails per CBC Section 2304.10.5.

B. Bolts and Lag Screws: Bolts shall be sizes indicated on Drawings. Holes for bolts shall be 1/16-inch larger than the bolt diameter. Malleable, Steel plate or standard flat washers shall be used where heads or nuts would otherwise bear directly on wood surfaces. Malleable or plate washers shall be used on all anchor bolts. Cut washers are not permitted. Lag screws shall be screwed (not driven) into place. For the shank, holes shall be bored the same depth and diameter as shank. For threaded portion, holes shall be pre-drilled as follows:

Lag Screw Size	Thread Portion Pre-Drill
1/2" diameter	1/4" diameter
5/8" diameter	5/16" diameter
3/4 diameter	3/8" diameter
7/8" diameter	1/2" diameter
1" diameter	5/8" diameter

Soap Lag screws prior to installation. Tighten all bolts and screws before closing in.

C. Framing Devices: Install according to the manufacturer's instructions unless otherwise noted.

3.4 FRAMING AND ROUGH CARPENTRY

- A. Sills: Shall be in long lengths of sizes shown, fastened with anchor bolts as indicated, a minimum of two anchor bolts per piece. Place steel plate washers (but not standard flat or malleable iron washers) under nuts bearing on wood. Set sills level and true.
- B. Studs, Posts and Columns: Shall be full length. Corners shall be as detailed. Partitions or walls containing plumbing, heating or other piping shall be so formed as to give proper clearance for materials. Cut members as required to provide full bearing at ends. Connect to structure as indicated.
- C. Plates: Shall be full length of wall segment or 12-foot minimum and spliced as shown.
- D. Blocking: Blocking shall be same thickness and width of studs or joists unless shown otherwise. Blocking shall not be spaced over 8'-0" c.c. Install fire blocking in accordance with CBC.

Horizontal fire blocking in walls shall be placed at floor lines and ceiling lines unless noted otherwise. Install blocking at all plywood joints where noted on the Drawings. Install wall width full height solid blocking at floor joists beneath all posts in walls. Blocking shall be installed around all wall, floor and roof penetrations.

- E. Joists and Beams: Shall be full span length and spliced over bearings unless shown otherwise. Install with crown side up. Beams or headers indicated to be built up of two or more joists shall be fabricated on the job using full length members. For two piece 2x members, stitch nail pieces together with 16d common nails spaced not over 12 inches c.c. and staggered. Clinch nails protruding through members. For three or more piece members, stitch bolt pieces together with ½" bolts spaced not over 12 inches c.c. and staggered.
  - 1. Provide double joists and headers at all openings through roof unless otherwise shown on Drawings.
  - 2. Provide typical headers at all openings through walls where one or more studs are required to be cut. For penetration through walls narrower than stud spacing, provide solid blocking on all sides for fastening finish materials.
- F. Wood Sheathing: Install to pattern indicated and provide blocking at joints where noted on the Drawings. Center all joints over bearing supports. Fasten to framing as indicated. Install wood sheathing with face plies perpendicular to joists unless indicated otherwise. Wall wood sheathing shall continue uninterrupted by ceilings or soffit from floor to floor or floor to roof unless specifically detailed on the Structural Drawings.
- G. Wood Furring, Stripping: Install as shown or required to provide nailing materials or passage of pipes, conduits, etc., not otherwise accommodated including ceiling stripping for gypsum drywall construction.
- H. Bridging: Space not over 8'-0" c.c. for spans over 16'-0". Joists 8 inches or less in depth shall not require bridging unless specifically indicated.
- I. Solid Wood Backing: Solid wood backing shall be provided for all wall and ceiling finishes and for supporting of mounted items for all trades, including but not limited to metal toilet partitions, toilet room accessories, frames, cabinets, casework, mirrors, trim, applied wall finishes, athletic equipment, food service equipment, piping, conduit, ducts, etc. Contractor shall coordinate placement of backing and supports with Subcontractor supplying mounted items.
- J. Building Paper: Install in all locations indicated except where included in other sections of the specifications.
- K. Cant Strips and Crickets: Shape to sizes shown. Rigidly fasten to construction. Form neat mitered corners.
- L. Wood Sheathing Backing: All toilet rooms, restrooms, single or joint occupancy shall have all walls backed with 5/8-inch thick wood sheathing with no surface voids. Install sheathing between the framing members and wallboard. The same wood sheathing shall also be provided and installed at all tile locations. At tile locations wood sheathing shall be installed between the framing members and the resin-cement backing board.

### 3.5 MISCELLANEOUS CARPENTRY WORK

- A. Install all items under other sections specified to be furnished and installed in other sections which relate to the rough carpentry work.
- B. Miscellaneous Carpentry Work not included under other sections but, indicated or required yet not specified elsewhere shall be furnished and installed hereunder, including appropriate fastening devices. Contractor shall provide miscellaneous carpentry work for all sections and divisions of work identified.
- C. Wood Curbs for Equipment: Construct all wood curbs for roof mounted equipment as detailed. Provide all miscellaneous blocking, bracing, supports, and other wood items as shown or required to complete the work.
- D. Plywood Backing for Electrical, telephone, and similar types of wall mounted equipment shall be provided hereunder where required. Plywood shall be 3/4-inch thick exterior A-C plywood with 'A' face exposed.
- E. Fire/Draft Stops: Construct fire and drafts stops in furred attic spaces where indicated or required by CBC code. Unless otherwise indicated on Drawings construct of not less than 5/8-inch Type 'X' gypsum wallboard or 1/2" wood sheathing, adequately supported by 2x4's at 24 inches c.c., braced diagonally to the roof structure. Draft stop and installation work shall conform to code requirements.
- F. Shoring and Bracing: Shore or brace for temporary support of all work as required during the construction period except any shoring and bracing specified and included under other sections of these specifications.
- G. Temporary Enclosures: Provide and maintain all barricades and enclosures required to protect the work in progress.
- H. Protect all work in progress and all work installed, as well as the work of all other trades. Any work damaged as a result of the work under this section shall be corrected to its original condition or replaced if directed by the Architect at no increase in cost to the Owner.
- I. Ventilation: Contractor shall include all labor and materials necessary to provide ventilation requirements of roof overhangs, eaves, attics, and all other components of the building required by codes to be ventilated. Work shall include removing knock-outs in wood I-joists for cross ventilation, drilling of blocking, wood sheathing, and other wooden components of the structure necessary to comply with requirements of the CBC for ventilation of buildings.

**END OF SECTION**

## SECTION 07 54 16

### KETONE ETHYLENE ESTER (KEE) ROOFING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Mechanically-fastened thermoplastic KEE roofing system on wood deck, including:
2. Roof insulation.
3. Roof insulation cover board.
4. Walkway material.

###### B. Related Sections:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers and blocking.
2. Division 07 Section "Sheet Metal Flashing and Trim" for shop-formed sheet metal items including roof drainage system items, roof penetration flashings, base and counterflashings and reglets, and formed copings and roof edge metal items.

##### 1.2 DEFINITIONS

- ###### A. Roofing Terminology:
- Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.

##### 1.3 PREINSTALLATION MEETINGS

###### A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review drawings and specifications.
3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

5. Examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.
6. Review structural loading limitations of roof deck during and after roofing.
7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
8. Review governing regulations and requirements for insurance and certificates if applicable.
9. Review temporary protection requirements for roofing system during and after installation.
10. Review roof observation and repair procedures after roofing installation.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Sustainable Design Submittals:
  1. Product Test Reports for Solar Reflectance: For roof materials, indicating that roof materials comply with Solar Reflectance Index requirement.
  2. Product Data and Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-VOC/low-emitting materials.
- C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
  1. Base flashings and membrane terminations.
  2. Tapered insulation, including slopes and crickets.
  3. Roof plan showing types and orientation of roof deck and orientation of membrane roofing and fastening spacings and patterns for mechanically fastened membrane roofing if applicable.
  4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
  5. Roof plan showing cricket layout.
- D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Contractor's Product Certificate: Submit certificate, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.
- B. Qualification Data: For Installer, Manufacturer and Roofing Inspector.
  - 1. Include letter from Manufacturer written for this Project indicating approval of Installer.
- C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
  - 1. Submit evidence of compliance with performance requirements.
    - a. Include: UL listing certificate.
  - 2. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives, and sealants.
- D. Warranties: Unexecuted sample copies of special warranties.
- E. Inspection Reports: Reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.
  - 1. Submit reports within 48 hours after inspection.

## 1.6 CLOSEOUT SUBMITTALS

- A. Executed copies of warranties.
- B. Maintenance Data: To include in maintenance manuals.

## 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
- B. Manufacturer Qualifications: Approved manufacturer listed in this Section, UL listed for roofing systems comparable to that specified for this Project, with minimum five years' experience in manufacture of thermoplastic roof membrane products in successful use in similar applications.
  - 1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

- a. Product data, including certified independent test data indicating compliance with requirements.
  - b. Samples of each component.
  - c. Sample submittal from similar project.
  - d. Project references: Minimum of five installations of specified products not less than five years old, with Owner and Architect contact information.
  - e. Sample warranty.
2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
  3. Approved manufacturers must meet separate requirements of Submittals Article.
- C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
1. An authorized full-time technical employee of the manufacturer.
  2. An independent party certified as a Registered Roof Observer by the International Institute of Building Enclosure Consultants (formerly the Roof Consultants Institute) retained by the Contractor or the Manufacturer and approved by the Manufacturer.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site access to manufacturer's written recommendations and instructions for installation of products.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
  1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

#### 1.9 PROJECT / FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
  - 1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of roofing sheet securely in place with joints and edges sealed.
  - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
  - 3. Remove temporary plugs from roof drains at end of each day.
  - 4. Remove and discard temporary seals before beginning work on adjoining roofing.

#### 1.10 WARRANTY

- A. Manufacturer's Warranty: Roof System Manufacturer's standard form in which Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period, as follows.
  - 1. Form of Warranty: Manufacturer's standard warranty form.
  - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
  - 3. Warranty Period: 30 years from date of completion with no provisions for intermediate renewals needed to achieve warranty term.
- B. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.
  - 1. Inspections to occur in the following years: 2, 5, 10, 15, 20 and 25 following completion.
- C. Installer Warranty: Installer's warranty signed by Installer, as follows.
  - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.
  - 2. Scope of Warranty: Work of this Section.

3. Warranty Period: 2 years from date of completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, [www.tremcoroofing.com](http://www.tremcoroofing.com) (Local Rep: Dan Lajeunesse) that are named in other Part 2 articles. Provide specified products or Architect approved equal.
  1. Manufacturers of comparable products: Approved by Architect prior to bid.
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

### 2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
  1. Accelerated Weathering: Roofing system shall withstand 10,000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
  2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-16 and applicable code.
  1. Zone 1 (Field-of-Roof) Uplift Pressure: 41.7 psf.
  2. Zone 2 (Perimeter) Uplift Pressure: 54.9 psf, located within 9 ft. of roof perimeter.
  3. Zone 3 (Corner) Uplift Pressure: 74.8 psf, located within 3 ft. of outside corners.
- C. Flashings and Fastening: Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
  1. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
  2. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.
  3. Comply with requirements of Division 07 Section "Sheet Metal Flashing and Trim".

- D. Exterior Fire-Test Exposure: ASTM E108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- E. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

## 2.3 MATERIALS, GENERAL

- A. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

## 2.4 THERMOPLASTIC MEMBRANE MATERIALS

### A. KEE Roof Membrane:

1. Thermoplastic Ketone Ethylene Ester (KEE) coated polyester fabric-reinforced sheet, ASTM D6754.
  - a. Basis of design product: Tremco, TremPly KEE Single Ply Roof Membrane.
  - b. Breaking Strength, minimum, ASTM D751: Machine direction, 500 lbf/in (87 kN/m); Cross machine direction, 400 lbf/in (70 kN/m).
  - c. Tear Strength, minimum, ASTM D751: Machine direction, 120 lbf (162 N/m); Cross machine direction, 140 lbf (190 N/m).
  - d. Elongation at Break, ASTM D751: 20 percent.
  - e. Dynamic Impact/Puncture Resistance, ASTM D5635: 30 J, minimum.
  - f. Minimum Membrane Thickness, nominal, less backing, ASTM D751: 60 mils (1.5 mm).
  - g. Thickness over fiber, optical method: 0.014 inches (0.355 mm).
  - h. Accelerated Weathering, ASTM G155 and ASTM G154: Not greater than 15,000 hr., no cracking or crazing.
  - i. Abrasion Resistance, ASTM D3389: Not greater than 2,000 cycles, H-18 wheel, 1,000 g load.
  - j. Color: White.
  - k. Solar Reflectance Index (SRI), ASTM E1980: 110 (White, initial), 86 (White, 3-yr aged).
- B. Sheet Flashing: Manufacturer's standard, smooth-backed, sheet flashing of same material, type, reinforcement, thickness and color as KEE roof membrane.

## 2.5 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.
  1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
    - a. Plastic Foam Adhesives: 50 g/L.
    - b. Single-Ply Roof Membrane Sealants: 450 g/L.
    - c. Nonmembrane Roof Sealants: 300 g/L.
    - d. Sealant Primers for Nonporous Substrates: 250 g/L.
    - e. Sealant Primers for Porous Substrates: 775 g/L.
  3. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Flashing Membrane Adhesive:
1. Bonding adhesive, solvent based fast drying, VOC-compliant, for bonding KEE smooth-backed single ply membranes and flashings to substrates.
    - a. Basis of design product: Tremco, TremPly KEE LV Bonding Adhesive.
    - b. VOC, maximum, ASTM D 3960: 200 g/L.
- C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 mm by 3 mm) thick; with anchors.
- D. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch (25 mm wide by 1.3 mm) thick, prepunched.
- E. Metal Stress Plates: Manufacturer's standard AZ50 Galvalume-coated steel formed plates, 0.047 inch thick, with radial corners and membrane-engaging barbs engineered to enhance wind resistance for mechanically-attached KEE membrane roofing systems. FMG approved.
1. Product: TremPly KEE Plus Stress Plates.
- F. Joint Sealant: Elastomeric joint sealant compatible with roofing materials, with movement capability appropriate for application.
1. Joint Sealant, Polyurethane: ASTM C920, Type S, Grade NS, Class 50 single-component moisture curing sealant, formulated for compatibility and use in dynamic and static joints; paintable.
    - a. Basis of design product: Tremco, TremSEAL Pro.
    - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 40 g/L.
    - c. Hardness, Shore A, ASTM C661: 40.
    - d. Adhesion to Concrete, ASTM C794: 35 pli.
    - e. Tensile Strength, ASTM D412: 350 psi (2410 kPa).
    - f. Color: White.

- G. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- H. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

## 2.6 ROOF INSULATION MATERIALS

- A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from insulation manufacturer's standard sizes, suitable for application, and of thicknesses indicated.
  - 1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Roof Insulation: Provide roof insulation product in thicknesses indicated in Part 3 as follows:
  - 1. Board Insulation, Polyisocyanurate: CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces, ASTM C1289 Type II Class 1.
    - a. Basis of design product: Atlas ACFoam II Insulation.
    - b. Compressive Strength, ASTM D1621: Grade 2: 20 psi (138 kPa).
    - c. Conditioned Thermal Resistance at 75 deg. F (24 deg. C): 14.4 at 2.5 inches (50.8 mm) thick.
  - 2. Tapered Board Insulation, Polyisocyanurate: Tapered ACFoam II Insulation, Type II, Class 1.

## 2.7 ROOF INSULATION ACCESSORIES

- A. Cover Board:
  - 1. Gypsum panel, glass-mat-faced, ASTM C1177/C1177M.
    - a. Basis of design product: Georgia Pacific Dens Deck.
    - b. Thickness: ½ inch (6 mm).
- B. Roof Insulation Adhesive:
  - 1. Adhesive manufactured or approved by roofing manufacturer.
- C. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- D. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- E. Insulation Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

## 2.8 WALKWAY MATERIALS

### A. Walkway / Protection Mat Material:

1. Walkway roll, reinforced PVC/TPA membrane roll with serrated slip-resistant surface, fabricated for heat welding to compatible PVC/TPA membrane surface.
  - a. Basis of design product: Tremco, TPA Walkway Roll.
  - b. Roll Size: 36 inches by 60 foot (914 mm by 18.3 m).
  - c. Thickness / Color: Gray, 0.072 inch (2 mm).
  - d. Tensile, Grab ASTM D751: 200 lbf (890 N).
  - e. Tear Strength, Tongue : 45 lbf (200N).
  - f. Low Temp Flex: -40 deg F. (-40 deg C.).

## PART 3 - EXECUTION

### 3.1 EXAMINATION

#### A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Existing Prepared Roof Substrate: Verify that existing insulation and substrate is sound and dry. Refer to requirements of Division 07 Section "Preparation for Re-Roofing."
4. Wood Roof Deck: Verify that deck is sound and dry and securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6 mm) out of plane relative to adjoining deck.
5. Verify that the existing substrate is sound and dry.

#### B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

### 3.3 INSTALLATION, GENERAL

- A. Install roofing system in accordance with manufacturer's written instructions and approved details.
- B. Install wood cants, blocking, curbs, and nailers in accordance with requirements of Division 06 Section "Miscellaneous Rough Carpentry."
- C. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

### 3.4 INSULATION INSTALLATION

- B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- D. Tapered Insulation and Crickets: Install tapered insulation under area of roofing to conform to slopes indicated.
  - 1. Where crickets are indicated or required to provide positive slope to drain, make slope of crickets minimum of two times the roof slope, not less than 1/4 inch in 12 inches (1:48).
- E. Install insulation under area of roofing to achieve the required thickness. Where overall insulation thickness is 2.7 inches (70 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
  - 1. Flat Insulation System on Sloped Roof Deck: Install insulation at minimum thickness as follows:
    - a. Minimum Continuous Insulation R-value: Not less than 10.
  - 2. Insulation Drain Sumps: Tapered insulation sumps, not less than 2 by 2 ft. (600 by 600 mm), sloped to roof drain; sump to maximum depth of not more than 1 inch (25 mm) less than the Project-stipulated continuous insulation thickness based upon code requirements.
- F. Trim surface insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
  - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
  - 2. Loose lay base layer of insulation.

H. Cover Boards: Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together.

1. Mechanically fasten cover boards using 8 fasteners per 4x8 board.

### 3.5 MECHANICALLY FASTENED MEMBRANE ROOFING INSTALLATION

A. Mechanically fasten membrane roofing over area to receive roofing and install according to roofing system manufacturer's written instructions.

B. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Mechanically fasten or adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. In-Seam Attachment: Secure one edge of membrane sheet using fastening plates or metal battens centered within membrane seam and mechanically fasten membrane sheet to roof deck.

G. Metal Stress Plate Installation:

1. Locate plates in grid pattern in accordance with membrane manufacturer's instructions.
2. Install plates in straight rows in the specified number and spacing to achieve the required wind uplift resistance in the main field, edges and corners of the roof.
3. Install plates and separation pads using fasteners that comply with the specified applicable building code wind uplift rating and the fastener and membrane manufacturer's requirements. Ensure that all fasteners are properly driven normal to the surface of the sub-structure. Do not over-drive fasteners; plates that are recessed into and/or not flush with the surface of the insulation are not acceptable.

H. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

- I. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

### 3.6 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Seal top termination of base flashing with a metal termination bar and a continuous bead of joint sealant.

### 3.7 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

### 3.8 FIELD QUALITY CONTROL

- A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.
  1. Engage a qualified roofing inspector for a minimum of 5 full-time days on site to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with applicable criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.9 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for

deterioration and damage, describing its nature and extent in a written report, with copies to Architect and and Owner.

- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 16

## **SECTION 07 56 00**

### **PREPARATION FOR RE-ROOFING**

#### **PART 1 - GENERAL**

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

###### A. Section Includes:

1. Roof tear-off.
2. Removal of base flashings.
3. Roof replacement preparation.

###### B. Related Requirements:

1. Division 01 – General Requirements, for use of the premises and phasing requirements, and for restrictions on use of the premises due to Owner or tenant occupancy.
2. Division 01 – General Requirements, for photographs taken before and during re-roofing preparation.
3. Division 01 – General Requirements, for temporary construction and environmental protection measures.
4. Division 01 – General Requirements, for roof rehabilitation requirements.
5. Section 07 62 00 "Sheet Metal Flashing and Trim" for formed metal roof flashings and counter-flashings.

##### 1.3 DESCRIPTION OF WORK

###### A. Roofing preparation Work consists of the following:

1. Roof areas indicated for Built-Up Roofing assembly removal and replacement:
  - a. Preparation for: Roof replacement.

- b. Existing Roof Type: 4-ply Built-Up Roofing.
  - c. Existing Deck Type: Plywood sheathing deck.
  - d. Roof system tear-off down to substrate / deck.
  - e. Removal and reinstallation of indicated components, accessories, and equipment as indicated on drawings.
2. Roof Areas indicated for Keytone Ethylene Ester KEE roof replacement:
- a. Preparation for: Roofing replacement.

#### 1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

#### 1.5 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Membrane Roofing System: Roofing system identified above, including roofing membrane, roof insulation, surfacing, and components and accessories between deck and roofing membrane.
- C. Roof Re-Cover Preparation: Existing roofing membrane that is to remain and be prepared for reuse or rehabilitation.
- D. Roof Tear-Off: Removal of existing membrane roofing system from deck.
- E. Partial Roof Tear-Off: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system.
- F. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- G. Existing to Remain: Existing items of construction that are not indicated to be removed.
- H. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- I. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

- J. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- K. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- L. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- M. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

#### 1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.

#### 1.7 INFORMATIONAL SUBMITTALS

- A. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection and for dust control. Indicate proposed locations and construction of barriers.
- C. Schedule of Re-Roofing Preparation Activities: Indicate the following:
  - 1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.
  - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
  - 3. Coordination for shutoff, capping, and continuation of utility services.
  - 4. Coordination of Owner's continuing occupancy of portions of existing building.
- D. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

## 1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Reroofing Conference: Conduct conference at Project site.
  - 1. Meet with Owner; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; deck Installer; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:
    - a. Reroofing preparation, including membrane roofing system manufacturer's written instructions.
    - b. Procedures for salvaging and recycling of demolition and construction waste.
    - c. Temporary protection requirements for existing roofing system that is to remain during and after installation.
    - d. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.
    - e. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
    - f. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
    - g. Structural loading limitations of deck during reroofing.
    - h. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
    - i. HVAC shutdown and sealing of air intakes.
    - j. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
    - k. Asbestos removal and discovery of asbestos-containing materials.
    - l. Governing regulations and requirements for insurance and certificates if applicable.

- m. Existing conditions that may require notification of Architect before proceeding.

## 1.9 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 48 hours' notice of activities that may affect Owner's operations.
  - 1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
  - 2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.
- B. Protect building to be reroofed or restored, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor's professional engineer based upon site inspection and analysis.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
- F. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
- G. Hazardous Materials: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
  - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
  - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
  - 3. Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.

## **PART 2 - PRODUCTS**

### 2.1 INFILL MATERIALS

- A. Use infill materials matching existing membrane roofing system materials unless otherwise indicated.

### 2.2 TEMPORARY ROOFING MATERIALS

- A. Design and selection of materials for temporary roofing are responsibilities of Contractor.

### 2.3 TEMPORARY ROOF DRAINAGE

- A. Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

### 2.4 AUXILIARY REROOFING MATERIALS

- A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of existing and new membrane roofing system.
- B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "Approval Guide."
- C. Metal Flashing Sheet: Metal flashing sheet is specified in Section 07 62 00 "Sheet Metal Flashing and Trim."

## **PART 3 - EXECUTION**

### 3.1 PREPARATION, GENERAL

- A. Existing Roof Protection: Protect existing membrane roofing system that is indicated not to be reroofed.
  - 1. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
  - 2. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.
  - 1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.
- C. Air Intake Shutdown: Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- D. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- E. Roof Drain Protection: Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
  1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
- F. Verify that rooftop utilities and service piping have been shut off before beginning the Work.

### 3.2 ROOF TEAR-OFF

- A. General: Notify Owner each day of extent of roof tear-off proposed for that day and obtain authorization to proceed.
- B. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.
  1. Remove cover boards and roof insulation.
  2. Remove fasteners from deck or cut fasteners off slightly above deck surface.

### 3.3 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
- B. Roof Deck: If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.
  1. Deck Securement: Provide additional deck securement as indicated on Drawings.

2. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

#### 3.4 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
  1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

#### 3.5 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

**END OF SECTION**

**SECTION 07 62 00**

**SHEET METAL FLASHING AND TRIM**

**PART 1 - GENERAL**

1.1. SECTION INCLUDES

- A. Coping, parapet, and cap flashings, if not included in other sections.
- B. Reglets and counter-flashings.
- E. Misc. other sheet metal flashings and trims not specifically described above – coordinate with work provided in other sections.
- F. Steel Pipe Downspouts.

1.3 STANDARDS AND REFERENCES (Current Edition for All Standards Listed)

- A. .ANSI SPRI ED-1 – Design Standard for Edge Systems Used with Low Slope Roofing Systems.
- B. ASTM B32 - Standard Specification for Solder Metal
- C. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
- D. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- F. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
- G. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free
- H. FS O-F-506 – Federal Specification: Flux Soldering: Past and Liquid.
- I. NRCA (National Roofing Contractors Association)-Roofing Manual.
- J. SMACNA - Architectural Sheet Metal Manual.

#### 1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Division 01 – General Requirements.
- B. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.
- C. Submit manufacturer's installation instructions under provisions of Division 01 – General Requirements.

#### 1.5 QUALITY ASSURANCE

- A. Fabricator: Company specializing in sheet metal flashing work with 5 years minimum experience.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products under provisions of Division 01 – General Requirements.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation.
- C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

#### 1.7 MOCKUPS

- A. Provide mockups for Architect's review and approval of critical transitions (corners, edge conditions, etc.)
- B. Provide mockups of all profiles listed in drawing for Architect's approval for size, gauge, and color.
- C. Mockups may be included in final work.

#### 1.8 WARRANTY

- A. Warranty Submittals: Provide submittals per Division 01 – General Requirements.
- B. Contractor's Guarantee:
  - 1. Provide Owner with written Guarantee on Contractor's letterhead and signed by General Contractor and flashing system subcontractor.
  - 2. Provide guarantee against the following defects for a time period of three years, commencing from the date of final acceptance of the project.
  - 3. Flashing blow-off or permanent deformation from wind.

4. Water intrusion through flashing joints into the building interior.
5. Make inspections and emergency repairs to defects or leaks in the roof system within twenty-four (24) hours of receipt of notice from the Owner.
6. Restore the affected areas to the standard of the original specifications as soon as weather permits.

## **PART 2 - PRODUCTS**

### **2.1 SHEET MATERIALS**

- A. Galvanized Steel:
  1. Classification: Per ASTM A653/A653M and A924/A924M.
- B. Finish: Hot Dip galvanized, G90 coating. See Section 09 91 00, "Painting" for preparation, primers and finishes related to galvanized sheet metal.
- C. Gauge As specified and shown on drawings. If not shown on drawings, provide minimum 22 gauge.
- D. Manufacture and install copings, roof edge flashings, etc. tested according to ANSI/SPRI ES-1 and capable of resisting the established design pressure.

### **2.2 ACCESSORIES**

- A. Fasteners: Galvanized steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.
- B. Sealant: Type specified in Section 07 92 00, "Joint Sealers".
- D. Solder: ASTM B 32; type with less than 0.2% lead.
- E. Flux: FS O-F-506.
- I. Counter-Flashing: Galvanized Steel, with wind-locks at 32 inches on center and at each corner.
- J. Corners: Provide factory prefabricated corner assemblies.
- K. Through Wall Flashing: Provide factory prefabricated Manufactured through-wall flashing
- L. Components:
  1. Provide sheet metal work as shown on Drawings and not specified under other Sections. Fabricate as indicated. Where specific details are not shown, fabricate according to applicable SMACNA "Architectural Sheet Metal Manual" criteria.

2. Form sections true to shape, accurate in size, square, and free from distortion or defects. Match profiles at connections. Provide ribs, cleats, and reinforcement necessary to make sections rigid and substantial. Allow for expansion and contraction.
3. Unless noted otherwise, fabricate cleats and starter strips of same material as sheet, minimum 2 inches wide, interlocked with fabrication.
4. Form pieces in longest practical lengths. Locate joints of fasciae, roof edges, and other sheet metal work exposed to view with respect to panel joints or other architectural features as indicated on Drawings, or as directed by Architect.
5. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip and cleat interlock.
6. Generally, provide shop joints single locked and soldered, or lapped, riveted and soldered. Provide field joints designed to permit expansion, with joint covers or lapped joints with "S" clips. Do not solder.
7. Provide all concealed stiffeners and bracing at roof edge trim, fascia and gutter cover as required by Architect.
8. Form material with flat lock seams unless noted otherwise. Overlap seams in direction of flow with finished width of lock seams and soldered lap seams not less than 1 inches, and finished width of unsoldered lap seams not less than 3 inches.
9. Where specified, solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Provide smooth even surface on exposed soldering on finished surfaces.
10. Provide shop formed transition and corner pieces with locked and soldered corners. Locate field joints not less than one foot nor more than three feet from actual corner. Shortest length dimension of any corner piece leg shall not be less than one foot.
11. Locate parapet coping expansion joints 20 feet on center maximum, and as otherwise required to permit expansion and contraction.
12. Fabricate flashing assemblies as specified in this Section and as shown on Drawings.

## 2.2. FINISH

- A. Paint flashing applications as specified below in off-site shop location.

## 2.3. OTHER \MATERIALS

- A. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

## **PART 3 - EXECUTION**

### **3.1 SURFACE CONDITIONS**

#### **A. Inspection:**

1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.
2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.
3. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
4. Verify roof membrane, elastomeric flashing, waterproof underlayment and base flashings are in place, sealed, and secure.
5. In the event of discrepancy, immediately notify the Architect.
6. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

#### **B. Preparation:**

1. Field measure site conditions prior to fabricating work.
2. Install starter and edge strips, and cleats before starting installation.

#### **C. Flashing Installation:**

1. Support all flashings with firm and stable attachments, anchored into solid backing as required.
2. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
3. Where required by installation, solder metal joints watertight for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
4. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Architect.
5. Insert flashings into reglets to form tight fit. Secure in place in accordance with the manufacturer's instructions.

#### **D. Coping Installation:**

1. Install coping with cleats and clips as specified and as shown on drawings. Provide continuous cleat at exterior surface. Provide approved fasteners at inside (roof) surface at 24 inches on center.

2. Install coping intermediate joints as specified.
3. Provide waterproof underlayment over wall framing and under coping flashing. Provide elastomeric flashing at all coping joints, extending 12 inches each side of joint. Coordinate with plaster underlayment installation.
5. Attach coping with welded connections, mechanical fasteners, clips, and brackets. Do not solder.

E. Roof Membrane Flashing:

1. Provide and install in coordination with roofing work, all flashing, counter-flashing, sleeves, and related components as required to provide a watertight installation.
2. Set sheet metal installed on or adjoining roofing in continuous bed of approved roofing cement.
3. Aluminum Components Installation:
  - a. Provide di-electric separation at all components, including fasteners.
4. Provide expansion sleeves at end of radiused components. Do not splice at mid-point of radius.

F. Fabrication Schedule:

1. Coping:
  - a. Material and Gage: Galvanized Steel.
  - b. Flashing with an exposed vertical face of 8" or less: 24 gauge.
  - c. Flashing with an exposed vertical face of 8" to 10": 22 gauge.
  - d. Flashing with an exposed vertical face of 10" to 15": 20 gauge.
  - e. Finish: As specified in this Section.
  - f. SMACNA Reference: Table 3-1, with J9 drive cleat, flat lock seam joint design, C1 corner, and E1 edge.
2. Prefabricated and Fabricated Reglet Counterflashing:
  - a. Material and Gauge: Galvanized steel, 22 gauge, painted.
  - b. Finish: As specified in this Section, painted.
3. Miscellaneous flashing, roof flashing, metal flashing assemblies and counterflashing:
  - a. Material and Gauge: Galvanized Steel:
  - b. Flashing with an exposed vertical face of 8" or less: 24 gauge.

- c. Flashing with an exposed vertical face of 8" to 10": 22 gauge.
  - d. Flashing with an exposed vertical face of 10" to 15": 20 gauge.
  - e. Finish: As specified in this Section, painted
5. Steel Pipe Downspout:
- a. Material and Gauge: ASTM A 53, Grade B, Schedule 40, galvanized, unless otherwise shown or specified.
  - b. Finish: Painted per Section 09 91 00, "Painting".

**END OF SECTION**

## SECTION 07 92 00

### JOINT SEALERS

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Preparing sealant substrate surfaces.
- B. Sealant and backing.

##### 1.2 REFERENCES

- A. ASTM C834 – Latex Sealing Compounds.
- B. ASTM D1056 – Flexible Cellular Materials – Sponge or Expanded Rubber.
- C. FS TT-S-227 – Sealing Compound: Elastomeric Type, Multi-Component.
- D. FS TT-S-230 – Sealing Compound: Elastomeric Type, Single Component.
- E. FS TT-S-1543a – Sealing Compound: Silicone Type.
- F. FS TT-S-001657 – Sealing Compound: Single Component, Butyl Rubber Based.

##### 1.3 SUBMITTALS FOR REVIEW

- A. Submit product data under provisions under Division 1.
- B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, color availability and shore hardness.
- C. Color of visible sealant to match adjacent painted surface unless specifically noted otherwise

##### 1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years experience.
- B. Applicator: Company Specializing in applying the work of this Section with minimum three years experience.
- C. Conform to Sealant and Waterproofers Institute requirements for materials.

## 1.5 FIELD SAMPLES

- A. Provide samples under provisions under Division 1.
- B. Construct one field sample illustrating sealant type, color, and tooled surface, maximum 12 inches long, in each differing sealant application.
- C. Do not proceed with remainder of sealant application until approved by the Architect.
- D. Approved sample may remain as part of the Work. Disapproved sample shall be removed.

## 1.6 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation. Deliver materials in unopened containers, store in dry, covered area.

## **PART 2 - PRODUCTS**

### 2.1 SEALANTS

- A. Use sealants selected from the following types, as indicated on drawings or as appropriate to the joint being sealed. Refer to schedule for additional approved applications.
  - 1. Type 1: One-part moisture curing Polyurethane sealant. FS TT-S-230C, Type II, non-sag, Class A DYNATROL I, manufactured by Pecora Corp., Harleysville, PA, SIKAFLEX-1a, manufactured by Silka Corp., Lyndhurst, NJ, or equal.
    - a. Elongation Capability: 25 Percent.
    - b. Shore A Hardness Range: 20 To 40.
  - 2. Type 2: Multi-part Polyurethane Base. FS TT-S-227E, Class A, Type II, non-sag, DYNATROL II, manufactured by Pecora Corp., Harleysville, PA, SIKAFLEX-2c N/A, manufactured by Sika Corp., Lyndhurst, NJ, or equal.
    - a. Elongation Capability: 50 Percent.
    - b. Shore A Hardness Range: 20 To 35.
  - 3. Type 3: One-part moisture curing Polyurethane sealant. FS TT-S-230C, Type 1, self leveling, Class A, UREXPAN NR-201, manufactured by Pecora Corp., Harleysville, PA, VULKEM 45, manufactured by MAMECO International

Inc., Cleveland, OH, or equal.

- a. Elongation Capability: 25 Percent.
  - b. Shore A Hardness Range: 35.
4. Type 4: Multi-part Polyurethane Base. FS TT-S-227, Type I, self-leveling, Class A, DYNATRED or UREXPAN NR-200, manufactured by Sika Corp., Harleysville, PA, SIKAFLEX-2c N/A, manufactured by Sika Corp., Lyndhurst, NJ or equal.
- a. Elongation Capability: 250 – 300 Percent.
  - b. Shore A Hardness Range: 40.
5. Type 5: One-part Silicone Sealant. FS TT-S-1543a Type S, non-sag, Class A, 863 ACETOXY Silicone Sealant, manufactured by Pecora Corp., Harleysville, PA, SCS 1200, manufactured by General Electric Co., Waterford, NY, or equal.
- a. Elongation Capability: 25 Percent.
  - b. Shore A Hardness Range: 27.
6. Type 6: One-part, non-sag, acrylic latex sealing compound, ASTM C834, AC-20 manufactured by Pecora Corp., Harleysville, PA, ACRYLIC LATEX No. 834 manufactured by Tremco, Beachwood, OH, or equal.
7. Type 7: One-part, non-sag, butyl rubber base acoustical sealant ASTM C834, BA-98, manufactured by Pecora Corp., Harleysville, PA, SHEETROCK ACOUSTICAL SEALANT manufactured by USG, Chicago, IL, or equal.

## 2.2 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 25 percent larger than joint width; DENVERFOAM or GREENROD, manufactured by Pecora Corp., Harleysville, PA. SONOFOAM BACKER ROD, manufactured by Sonneborn building Products, Minneapolis, MN, or equal.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application. Apply to bottom of joints which are too shallow to receive foam backer rod.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing surfaces.

### 3.2 PREPARATION

- A. Clean and prime joints in accordance with manufacturer's instructions.
- B. Remove loose materials and foreign matter which might impair adhesion of sealant. Remove dust with compressed air.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Perform preparation in accordance with manufacturer's recommendations.
- E. Protect elements surrounding the work of this Section from damage or disfiguration.

### 3.3 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions, using hand pointing tools, hand- operated pressure guns or air operated guns with reciprocal pumps and hoses.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width. Where sealant is applied to concrete, concrete is to be fully cured.
- D. Install bond breaker where joint backing is not used. Install removable masking material to maintain clean lines and protect adjoining surfaces.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges. Do not install sealant on wet or damp surfaces.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints concave, channel shaped or as detailed. Use slicking agent type recommended by manufacturer.

### 3.4 CLEANING AND REPAIRING

- A. Clean adjacent soiled surfaces immediately before sealant cures.
- B. Repair or replace defaced or disfigured finishes caused by work of this Section.

### 3.5 PROTECTION OF FINISHED WORK

- A. Protect finished installation from the work of other sections.
- B. Protect sealants until cured.

### 3.6 SCHEDULE

- A. Exterior Joints; Unless Specified Otherwise in Individual Sections:
  - 1. Joints between metal frames and concrete or masonry: Sealant Type (1).
  - 2. Joints Between Impervious Materials: Sealant Type (1).
  - 4. Joints in sheet metal flashings: Sealant Type (1).
- B. Interior Joints; Unless Specified Otherwise in Individual Sections: **Not Used**
  - 1. Vertical expansion and control joints: Sealant Type (1).
  - 2. Joints between impervious materials: Sealant Type (1).
  - 3. Horizontal expansion, control, isolation and abutment joints: Sealant Type (3) or (4).
  - 4. Window and door perimeters: Sealant Type (1).
  - 5. Gypsum Board Joints: Sealant Type (1).
  - 6. For sink, tub or bath areas including countertop joints: Sealant Type (5).
  - 7. Other interior joints as indicated or shown: Sealant Type (1).
  - 8. Intersection of wall surface and cap strip at resilient flooring integral cove: Sealant Type (1).
  - 9. Intersection of metal or wood thresholds and floor substrate, where building components are mechanically attached and required sealing: Sealant Type (6).
  - 10. Perimeter of sound-rated walls, at intersection of gypsum board and abutting surfaces, both sides of wall: Sealant Type (7).

END OF SECTION

**SECTION 09 21 16**  
**GYPSUM BOARD**

**PART 1 - GENERAL**

1.1 SECTION INCLUDES

- A. Standard gypsum board – patch back in kind
- D. Gypsum board finish and joint treatment

1.2 RELATED SECTIONS

- C. Section 06 10 00 - Rough Carpentry
- G. Work may be required to be coordinated with other sections

1.3 STANDARDS AND REFERENCES (Current Edition for All Standards Listed)

- A. ASTM C514-04- Standard Specification for Nails for the Application of Gypsum Board
- A. ASTM C840 – Standard Specification for Application and Finishing of Gypsum Board
- E. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
- F. ASTM C1396/C1396M - Standard Specification for Gypsum Board
- G. ASTM D3273 – Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- H. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials
- I. Gypsum Association GA-214 – “Recommended Levels of Finish for Gypsum Board”
- J. Gypsum Association GA-216 - Application and Finishing of Gypsum Board Products.
- K. Conform to CBC Chapter 25 / CBC Chapter 25A, Part 2, Title 24, CCR for finish materials installation.

1.4 SUBMITTALS

- A. Provide submittals under provisions per Section 01 33 00, “Submittal Procedures”.
- B. Submit product data indicating materials, joint toppings, joint tape, and finish materials, and accessories.
- D. Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- A. Manufacturer: Provide company who has produced the specified products for a period of 5 years prior to beginning work of this Section and maintains the capability to provide the specified products in compliance with the delivery and quantity criteria for the Project.

- B. Installer: For installation of work, use only personnel who are thoroughly trained and experienced in the skills required, have installed similar applications of the specified products within one year prior to beginning work of this Section, and who are completely familiar with the manufacturers' recommended methods of installation as well as the requirements of this work.

#### 1.6 ENVIRONMENTAL REQUIREMENTS

- A. Building Temperature and Ventilation: Do not install wallboard and joint compounds if building temperature is below 55 degrees F and proper ventilation is not provided to eliminate excessive moisture from building.

#### 1.7 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

#### 1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver: All materials shall be delivered in original packages or bundles with the manufacturer's labels intact and legible.
- B. Handling and Storage: Materials shall be kept dry, stacked off the ground and properly supported and protected from weather. Protect all edges and surfaces. Stack wallboard flat.
- C. Protect work in progress as well as work of other trades. Clean surfaces that have been spotted during wallboard application.
- D. Contractor shall remove and reinstall all existing conduit, wiremold, light fixtures, fire alarm devices, etc. as required to perform work as listed in this specification. Suspend all wiring as required during work where equipment cannot be disconnected.

#### 1.9 MOCKUPS/TEST INSTALLATIONS – NOT USED

- A. Provide minimum 8'-0" x 8'-0" in place wall texture mock-up for Architect approval of texture.
- B. Mock up portion can remain for inclusion in final work.

### **PART 2 - PRODUCTS**

#### 2.1 MANUFACTURERS

- A. Basis of Design: Characteristics of specific products, where named in this Section, are indicated to establish required level of quality, appearance, and performance.
  - 1. United States Gypsum Co., USG. Phone - (800) 874-4968
  - 2. Georgia Pacific Building Products – Phone - (800) 225-6119
- B. Alternate: National Gypsum Company – Phone (704) 365-7300

C. Substitutions per Section 01 25 00, "Substitution Procedures".

## 2.2 GYPSUM BOARD

### A. Board Type:

#### 1. Non-Rated Gypsum Board:

- a. Equal to USG, Sheetrock® Brand, "Regular" Gypsum Board, per ASTM C1396.
  - 1) Thickness: 5/8 inch.
  - 2) Facing: Paper.
  - 3) Edge: Tapered.
  - 4) Website Link: <https://www.usg.com/content/usgcom/en/products/walls/dry-wall/drywall-panels/regular-panels/sheetrock-gypsum-panels.141010.html>

#### 2. Rated Gypsum Board:

- a. Equal to USG, Sheetrock® Brand, "Type X, Fire-Rated" Gypsum Board, per ASTM C1396.
  - 1) Thickness: 5/8 inch.
  - 2) Facing: Paper.
  - 3) Edge: Tapered.
  - 4) Website Link: <https://www.usg.com/content/usgcom/en/products/walls/dry-wall/drywall-panels/fire-resistant-panels/sheetrock-firecode-x-gypsum-panels.142220.html>

## 2.3 ACCESSORIES

A. Acoustical Sealant: USG, Tremco, or equal, Non-hardening, non-skinning, conforming to ASTM C557 and C919, for use in conjunction with non-rated gypsum board assemblies.

### B. Drywall Joint and Edge Accessories:

1. Corner Bead: USG or approved alternate, paper faced metal.
2. Edge Trim: USG GA 216; Type "J" bead. or approved alternate, paper faced metal.
3. Expansion Joint: USG 093 or approved alternate, metal.
4. Drywall Reveal: Fry, DRM Series, reveal dimension as shown on drawings.

### C. Joint and Finishing Systems:

1. Provide systems produced by same manufacturer as boards.
2. Joint Materials: GA 216; reinforcing tape, joint compound, adhesive, water, and fasteners.
3. Joint Systems: USG Ready Mixed Compounds, complying with ASTM C475, vinyl based, certified asbestos free.
4. Finishing System Materials: USG Multi-Purpose or approved alternate, complying with ASTM C475, non-aggregate, vinyl based, certified asbestos free.

5. Primer: Manufacturer's approved primer, compatible with finishes specified in other Sections.
- D. Fasteners:
  1. Gypsum Board Screws: Self-drilling, self-tapping steel screws.
    - c. Per GA 216 provide:
      - 3) Type W at wood framing,
    - d. Not less than 1-1/4" long at 5/8" sheathing thickness per Table 1, GA 253.
- E. Adhesive: Manufacturer's approved adhesive for attachment to concrete surfaces.
- F. Joint Compound: Durabond as manufactured by USG, or equal. For use at all locations where gypsum board is in direct contact with concrete curbs.

Product Link: <https://www.usg.com/content/usgcom/en/products/walls/drywall/joint-compound/setting-type-powder-joint-compounds/sheetrock-durabond-joint-compound.html>
- G. Electrical Box Sealer: Lowry's "Electrical Box Pads", 6" x 8" x 1-1/8" resilient sealer pads. Covers per Electrical specification and drawings.
- H. Underlayment Membrane: Membrane complying with ANSI A 108.2-3.8.

#### 2.4 FIRE-RATED SHAFTWALL ASSEMBLIES – **Not Used**

#### 2.5 METAL SUSPENSION SYSTEM FOR DRYWALL CEILING ASSEMBLIES -**Not Used**

#### 2.6 WEATHER BARRIER – **Not Used**

#### 2.7 OTHER MATERIALS

- A. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

### **PART 3 - EXECUTION**

#### 3.1 INSPECTION

- A. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.
- B. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.
- C. Verify framing members are properly installed and will comply with specified tolerances.
- D. Verify that openings, curbs, pipes, sleeves, ducts, and vents are solidly set, and blocking and backing is in place.
- E. Do not proceed with installation of wallboard until deficiencies are corrected and surfaces to receive wallboard are acceptable.
- F. In the event of discrepancy, immediately notify the Architect.

- G. The Painting Contractor shall not be required to accept the gypsum wallboard installation until after he has applied sealer. At that time he shall inspect the installation and report to the General Contractor, with a letter to the Architect, of any surface damage, defects or uneven walls. Uneven walls shall mean those that are not straight, plumb or of an even, true plane. All such discrepancies shall be the responsibility of gypsum wallboard installer, and shall be corrected by him prior to application of further wall decoration.
- H. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
- I. Beginning of installation means acceptance of existing surfaces substrate.
- J. At all existing gypsum board surfaces to be refinished as shown on the drawings, Contractor shall rough sand all surfaces prior to skim coat for acceptable adhesion.

### 3.2 PREPARATION

- A. Insulation Coordination:
  - 1. Verify insulation is fitted tightly within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and to items passing through partitions.
  - 2. Install insulation specified in this Section as a component in rated floor/ceiling and roof/ceiling systems.

### 3.3 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with manufacturer's instructions and designated system number for fire rated assemblies.
  - 1. Unless noted otherwise, utilize water resistant type for wall surfaces within four feet of the outermost edge of any plumbing fixture or moisture generating equipment. Extend water resistant gypsum board full height.
  - 2. Do not use water resistant gypsum board on ceiling applications.
  - 3. Do not use water resistant gypsum board at any shower/locker room applications, wall or ceiling.
- B. Prior to installation of any gypsum board product, Contractor shall review locations of all toilet room accessories with owner to place all backing required.
- C. Install gypsum board in accordance with GA 216, and ASTM C840.
- D. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- F. Use screws when fastening gypsum board to wood furring or framing.
- G. Fasteners for all vertical gypsum boards shall be placed at 8" at the perimeter and 12" in field U.O.N. on drawings.
- H. Treat cut edges and holes in moisture resistant gypsum board with sealant.
- I. Place control joints consistent with lines of building spaces as indicated by Architect.
- J. Place corner beads at external corners. Use longest practical length. Place edge trim where

gypsum board abuts dissimilar materials.

- K. Contractor shall provide new mud ring extensions for all electrical switch and outlets to allow device to flush with face of new gypsum board surface.
- L. At all locations where gypsum board extends past bottom sill plate and contacts face of curb, apply Durabond product to back side of gypsum board per manufacturer's recommendations to secure to face of concrete curb. Provide moderate pressure and temporary nailing or shoring to ensure adequate bond.
- M. Where gypsum board extends across concrete curbs, install with specified adhesive, consisting of vertical beads placed at 4 inches on center full height. Bond to curb with rollers exerting sufficient pressure to assure full contact and surface alignment with board at framing above.
- N. Use screws of proper length when fastening gypsum board to framing, spaced at 8 inches on center maximum at each support.
- O. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
- Q. Edge and Trim Installation:
  - 1. Install corner beads at all external corners. Use longest practical length.
  - 2. Install corner beads at all conditions where gypsum board abuts dissimilar materials.
  - 3. Install angle reinforcement at interior corners.
  - 4. Tape and finish joint reinforcement as specified.
- R. Install acoustical sealant at wall edge perimeter, including floor edge, and at all penetrations where fire stopping is not required.

### 3.5 GYPSUM BOARD FINISH AND JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.
- C. Comply with descriptions and Finish Levels as specified and in accordance with referenced standard.
- D. LEVEL 1 Finish: Gypsum board located above ceiling areas, plenums, and similar surfaces not visible in completed construction:
  - 1. Embed tape at all joints and interior angles in joint compound.
  - 2. Apply one separate coat of joint compound over all joints, angles, fastener heads, and accessories.
  - 3. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
- E. LEVEL 1 Finish: Gypsum board designated to receive rigid FRP or solid paneling.
  - 1. Embed tape at all joints and interior angles in joint compound.

2. Apply two separate coats of joint compound over all joints, angles, fastener heads, and accessories.
  3. All joint compound shall be smooth and free of tool marks and ridges.
  4. Apply uniform coat of approved primer over entire surface with roller.
- F. LEVEL 3 Finish - Knock-Down Finish: Gypsum board designated to receive flat paint finish.
1. Embed tape at all joints and interior angles in joint compound.
  2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.
  3. Apply texture coating over entire surface. Finish in "Knock-Down" texture as illustrated in USG Construction Handbook. Surface shall be smooth and free of tool marks and ridges.
  4. Apply uniform coat of approved primer over entire surface with roller.
- G. LEVEL 4 Finish - Orange Peel: Gypsum board surfaces receiving eggshell, semi-gloss or gloss paint finish.
1. Embed tape at all joints and interior angles in joint compound.
  2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.
  3. Apply texture coating over entire surface. Finish in "Orange Peel" texture as illustrated in USG Construction Handbook. Surface shall be smooth and free of tool marks and ridges.
  4. Apply uniform coat of approved primer over entire surface with roller.
- H. LEVEL 5 Finish - Smooth: Gypsum board surfaces receiving eggshell, semi-gloss or gloss paint finish.
1. Embed tape at all joints and interior angles in joint compound.
  2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.
  3. Apply thin skim coat of joint compound over entire surface. Sand as necessary. Surface shall be smooth and free of tool marks and ridges.
  4. Apply uniform coat of approved primer over entire surface with roller.

### 3.6 TOLERANCES

- A. Comply with the following tolerances for level, plumb and flat. Where substrate framing will not comply with specified tolerances, correct deficiencies as required.
1. Level and Plumb: Plus or minus 1/4 inch in 10 feet, non-cumulative.
  2. Flatness: No gaps exceeding 1/8 inch at any point under a 10 foot straight edge placed on surface in any orientation.

### 3.7 ACOUSTICAL ACCESSORIES INSTALLATION

- A. Install acoustical sealant within partitions in accordance with manufacturer's instructions.
- B. Install resilient sealer pads over backs and sides of electrical junction boxes.

### 3.8 ADJUST AND CLEAN

- A. **Cleaning and Repair:** Clean surfaces that have been spotted or soiled during wallboard application. Contractor shall clean all light fixture lenses, fire alarm devices, electrical outlets, as performing work.
- B. **Defective Work:** Remove and replace defective work which cannot be satisfactorily repaired, at the direction of the Architect, with no additional cost to the Owner.
- C. **Protection:** Protect installed work against damage from other construction work.

### 3.9 CLEAN-UP

- A. Upon completion of the work under this Section, remove all surplus material, rubbish and debris from the premises and leave floors "broom clean".

**END OF SECTION**

**SECTION 09 51 53**  
**DIRECT-APPLIED ACOUSTICAL**  
**CEILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Acoustic Tile units to match existing direct-applied ceiling tiles.
- B. Perimeter trim.

**1.02 RELATED REQUIREMENTS**

- A. Section 09 21 16 – Gypsum Board Assemblies.

**1.03 REFERENCE STANDARDS**

- A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- B. ASTM E795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.
- E. California Code of Regulations, Title 24, Part 2, California Building Code (CBC), International Building Code.
- F. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Sequence work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Install acoustic units after interior wet work is dry.

**1.05 SUBMITTALS**

- A. See Section 01 33 00 - Submittals, for submittal procedures.
- B. Product Data: Provide data on acoustic units and accessories.
- C. CAL-GREEN Submittals: Product Data – VOC Limits: For adhesives sealants, fillers, primers and coatings, documentation including printed statement of VOC contents, comply with limits specified in related section.
- D. Samples: Submit two samples, of manufacturer's standard size, illustrating material and finish of acoustic units, match existing.
- E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 66 00 - Product Delivery Storage and Handling, for additional provisions.
  - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum five (5) years of documented experience.

#### **1.07 PROJECT CONDITIONS**

- A. Sequence work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Install acoustic units after interior wet work is dry.
- C. Maintain uniform temperature and humidity not exceeding the manufacturer's outside limits prior to, during, and after installation.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Direct Applied Acoustical Ceilings:
  - 1. Armstrong World Industries, Inc: [www.armstrong.com/#sle](http://www.armstrong.com/#sle).
- B. Substitutions: See Section 01 25 13 - Product Options and substitutions

#### **2.02 MATERIALS**

- A. VOC Limits for adhesives, sealants, fillers, primers and coatings . Comply with limits specified in related section.
- B. Acoustic Tile, Direct Applied: Mineral Fiber, wet-formed, factory-applied latex paint, ASTM E1264, Type III, Form 2, Pattern C E.
  - 1. Size: 12 by 12 inches.
  - 2. Thickness: 1/2 inch minimum.
  - 3. CAC: NA
  - 4. Light Reflectance: 0.82.
  - 5. Noise Reduction Coefficient (NRC): 0.55 when tested in accordance with ASTM C423 for Type direct-applied mounting, per ASTM E795.
  - 6. Fire Hazard Classification: ASTM E84 Class A (Flame Spread 25 or under), UL Labeled.
  - 7. Surface Burning Characteristics: Flame spread index of 0-25, smoke developed index of 0-450, when tested in accordance with ASTM E84.
  - 8. Humidity/Sag Resistance: HumiGuard® Plus.
  - 9. Anti-Mold/Mildew: BioBlock® performance resist the growth of mold and mildew on the tile surface. Disinfectable CleanAssure™.
  - 10. VOC Emissions: GreenGuard Gold Certified with California Dept. of Public Health CDPH/EHLB Standard Method.
  - 11. Recycled Content: Exceed 50% total recycled content.
  - 12. Edge: Beveled, tongue and groove.

13. Surface Color: Match existing. As selected by Architect
14. Surface Pattern/Finish: Non-directional fissured.
15. Product:
  - a. Armstrong; Fine Fissured® 741 – match existing.
  - b. Substitutions: Section 01 25 13 - Product Options and substitutions
- C. Adhesive: Waterproof, gun grade; type recommended by tile manufacturer.

**2.03 FINISHES – Not Used**

- A. Acoustic Tile and Perimeter Trim Color(s) as selected by Architect from:
  1. Manufacturer's full range of standard colors - match existing.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify existing conditions and substrate flatness before starting work.
- B. Verify that substrate conditions are ready to receive the work of this section.

**3.02 INSTALLATION**

- A. Install system in accordance with manufacturer's instructions.
- B. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Install acoustic units level in uniform plane.

**3.03 TOLERANCES**

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

**END OF SECTION**

**SECTION 09 91 00**  
**PAINTING**

**PART 1 - GENERAL**

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Surface finish schedule includes painting of all exposed surfaces, except as otherwise specified or indicated.
- D. Painting of all new and existing piping, ductwork, conduit and supports to match interior/exterior paint finishes.
- E. Paint colors to match District's previous color by Kelly Moore.

1.2 RELATED SECTIONS

- A. Section 00 72 00 - General Conditions.
- J. Section 07 62 00 - Sheet Metal Flashing and Trim

1.3 REFERENCES (Current Edition for All Standards Listed)

- A. ASTM B117 – Standard Practice for Operating Salt Spray (Fog) Apparatus
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.  
Note: Conform to this document for interpretation of terms used in this Section.
- C. ASTM D3359 – Standard Test Methods for Rating Adhesion by Tape Test
- D. ASTM D4060 – Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
- E. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials
- F. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials
- G. ASTM G154 - Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials
- H. Society for Protective Coatings (SSPC) & National Association of Corrosion Engineers (NACE):
  - 1. SSPC Surface Preparation Specification No. 1 (SP 1) – Solvent Cleaning
  - 2. SSPC Surface Preparation Specification No. 2 (SP 2) – Hand Tool Cleaning
  - 3. SSPC Surface Preparation Specification No. 3 (SP 3) – Power Tool Cleaning
  - 4. SSPC- Surface Preparation Specification No. 6 (SP 6) /NACE No. 3 - Commercial Blast Cleaning

1.4 REGULATORY REQUIREMENTS

- A. Conform to the 2019 California Building Code for flame/spread/smoke density rating requirements for finishes.
- B. Furnish manufacturer's certification that all paint coatings furnished for project work comply with the EPA clean air act for permissible levels of volatile organic content for architectural coatings applied in California as designated by California Air Resources Board (CARB).

#### 1.5 SUBMITTALS

- A. Provide submittals under provisions of Section 01 33 00, "Submittals".
- B. Product Data: Submit product data of all proposed products, identifying product series, material composition, performance characteristics and sheen. Product data shall include the paint manufacturers recommended mil thickness application of each coat for each type of paint specified.
- C. Submit manufacturer's certificate that products comply with current safety and environmental regulations, including hazardous materials labeling and air quality/VOC regulations
- D. Submit manufacturer's certificate that products are physically and chemically compatible with each other and meet listed ASTM or Federal Specifications.
- E. Where applicable, provide manufacturer's written evaluation of existing paint/coating systems, including directions as to surface preparation and primers compatible with existing systems.
- F. Submit manufacturer's application instructions for each painting system, including surface preparation.
- G. Color Selection procedure:
  - 1. Provide Architect with samples of complete color and sheen range available for submitted products.
  - 2. Based on submitted samples and specified color criteria, Architect will prepare preliminary color schedule for all field applied coatings.
  - 3. Based on preliminary color schedule, submit samples of all coatings, applied on specified substrate. Submit three samples, approximately 8 x 10 inch in size, illustrating each color and sheen scheduled.
  - 4. After review of preliminary color schedule samples, Architect will prepare final color schedule. Where different from preliminary schedule, submit three samples, approximately 8 x 10 inch in size, illustrating revised color and sheen.
- H. Submit four brush-out samples 8x10 inch in size illustrating color and sheen selected for each surface-finishing product shown in the finish schedule.
- I. Field Sample: Furnish sample of actual paint colors selected on portion of building item to receive paint as directed by Architect, prior to beginning interior and exterior painting.

#### 1.6 QUALITY ASSURANCE

- A. Applicator: Company specializing in commercial painting and finishing with five years documented experience.
- B. Installing Foreman: Individual specializing in applying specified systems with minimum 10 years documented experience.

## 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 65 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.
- C. Minimum Application Temperatures for Latex Paints: 50 degrees F. for exterior work; 45 degrees F for interior work, unless required otherwise by manufacturer's instructions.
- D. Prior to beginning preparation and coating application, provide lighting level of 80 foot-candles measured mid-height at substrate surface. Where natural lighting does not provide such levels, provide temporary lighting.
- E. Apply all alcohol-based primers, vanishes, lacquers or other products that produce excessive fumes after school hours or on weekends.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 60 00, "Product Requirements", in manufacturer's original unopened, labeled containers, inspect to verify acceptance.
- B. Store and protect products from abuse and contamination, under provisions of Section 01 60 00, "Product Requirements".
- C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
- D. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in an enclosed metal storage container located outside of building, unless required otherwise by manufacturer's instructions.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

## 1.9 EXTRA STOCK

- 1. Provide one unopened five-gallon container of each color and sheen to Owner.
- 2. Label each container with color, sheen, and room locations, in addition to the manufacturer's label.

## **PART 2 - PRODUCTS**

### 2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design - Paint: Specific products listed on Schedule in Part 3 of this Section, are indicated to establish required level of quality, appearance, and performance.
  - 1. Sherwin Williams (Specification Basis of Design for Paint and High Performance Coatings, where noted, U.O.N.)
- B. Alternate Manufacturers - Paint:

1. Benjamin Moore
  2. Dunn-Edwards
  5. Or approved equal
- E. Basis of Design, Paint Coatings, - Contacts:
1. Sherwin Williams  
Address: Cleveland Ohio  
Website - <https://www.sherwin-williams.com/>
    - a. SW Product Representative  
Richard Condie, Phone - (916) 267-3232, E-mail – [Richard.condie@sherwin.com](mailto:Richard.condie@sherwin.com)

## 2.2 MATERIALS

- A. Coatings: Ready mixed manufacturers paint. Process pigments to a soft paste consistency capable of being readily and uniformly dispersed to a homogeneous coating, except field catalyzed coatings.
- B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.
- C. Accessory Materials: Provide all admixtures, thinners, flow agents and other materials not specifically indicated but required to achieve the finishes specified.

## 2.3 FINISHES/COLOR

- B. Colors shall be selected by Architect as specified.
- C. Each coat shall be a perceptibly different tint.
- D. Color Range (For Colors Not Selected Or Noted Elsewhere):
  1. Unless noted otherwise, where exterior painting occurs, match existing school color scheme.
  2. Where no color range is specified, provide single color for each item or component.

## PART 3 - EXECUTION

### 3.1 INSPECTION

- A. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Verify that work of this Section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. Measure moisture content of surfaces using an electronic moisture meter. Provide de-humidifiers and heat as necessary to obtain required environmental conditions for interior paint

applications. Do not apply finishes unless moisture content of surfaces is below the following maximums:

1. Plaster, Gypsum Wallboard: 18 percent.
  2. Interior Located Wood: 15 percent, measured in accordance with ASTM D4442.
  3. Exterior Located Wood: 7 percent measured in accordance with ASTM D4442.
- E. In the event of discrepancy, immediately notify the Architect.
- F. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
- G. Contractor to arrange for Inspector's verification of proper surface preparation prior to start of painting and between each coat.
- H. Beginning of paint application to any new surface means acceptance of surfaces prepared under separate specification section.

### 3.2 PREPARATION

- A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.
- B. Remove all loose and peeling paints
- C. Correct all defects on existing surfaces including patching holes in walls and ceilings, skimming surfaces, repairing cracks, puttying, sanding, etc. to restore original wall finish and provide a uniform texture. Spot prime all areas of repair.
- D. Clean all surfaces thoroughly with approved cleaning product. Rinse thoroughly and allow to completely dry before coating.
- E. Remove or seal marks which may bleed through surface finishes with B-I-N Primer (additional coats may be required), shellac, or other approved sealers, compatible with finishes to be applied.
- K. Bare or Existing Metal Surfaces:
1. Unless otherwise specified, clean surfaces, per SSPC, SP 1, with a solvent approved by paint system manufacturer. Solvent shall be compatible with new paint system materials, OR sand and feather existing finishes in place using methods referenced within SSPC, SP 2 or SP 3 surface preparation standards. Use of acidic or other corrosive paint removal techniques generating caustic or noxious fumes is not permitted.
  2. Surface Preparation For Materials With High Performance Coatings: SSPC-SP6/NACE No. 3 Commercial Blast Clean to create a dense, uniform and angular anchor profile of 2.0 mils minimum
  3. Completely prime entire surfaces.
  4. Use an approved primer that will be compatible and warranted by the selected paint manufacturer over any surface that has been previously painted with an oil-base finish.
- L. Galvanized Metal Surfaces:

1. Unless otherwise specified, clean surfaces, per SSPC, SP 1, with a solvent approved by paint system manufacturer. Solvent shall be compatible with new paint system materials, OR sand and feather existing finishes in place using methods referenced within SSPC, SP 2 or SP 3 surface preparation standards. Use of acidic or other corrosive paint removal techniques generating caustic or noxious fumes is not permitted.
3. Test all galvanized steel surfaces for evidence of chromate conversion treatments or other post-galvanizing applications that are not compatible with paint finishes.
4. Where testing demonstrates presence of such treatment, brush blast or otherwise mechanically abrade the surface as required by coating manufacturer.

### 3.3 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. All IDF's are to be properly protected in a manner that allows ventilation adequate to prevent damage to equipment. At completion of painting work, all IDF's must be professionally cleaned by an approved technician with a minimum of 3-years of experience in computer cleaning.
- E. Remove all debris, including empty paint containers, from site and properly dispose of in lawful manner.
- F. Do not use storm drain system for clean-up.

### 3.4 APPLICATION

- A. Apply products in accordance with manufacturer's instructions. Provide coats in appropriate mill thickness to provide suitable cover. Additional coats may be required to provide an acceptable finish depending on base tint and existing color bleed through.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish. Number of coats in schedule are the minimum required, additional coats shall be applied as required to achieve a finish that is uniform in color and sheen
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand lightly between coats to achieve required finish.
- F. Allow applied coat to dry before next coat is applied.
- G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- H. Prime back surfaces of interior and exterior woodwork with primer paint as recommended by manufacturer.
- P. Exterior surfaces, except as noted in other sections, including plasterconcrete, metal fabrications, structural components and metal flashings: Unless noted otherwise, apply paints and coatings as specified below:

1. Unless noted otherwise, do not paint exterior galvanized metals, including railings, steel structural components, all roof flashings and accessories, all plaster trim and accessories, and all mechanical and electrical system components.
  2. Apply exterior paint to all roof penetrations visible to the eye from typically occupied locations in the finished project. "Typically occupied" includes those portions of the project visible to a standing person from elevated portions of the site.
  3. Apply exterior paint to steel structural components, canopy decking, canopy framing, and miscellaneous fabrications visible to the eye from typically occupied locations in the finished project.
  4. Unless designated as prefinished on drawings, apply exterior paint to metal roof copings, gutters, downspouts and flashings visible to the eye from typically occupied locations in the finished project.
  5. Apply exterior paint to all plaster trim, reveals and accessories.
  6. Do not paint exterior galvanized metal handrails and railings.
- Q. Apply paint to all other exterior components as specified or shown on drawings.
- R. Paint suspended pipe batten systems with interior finish, applied by spray method. Paint all surfaces of grid members.
- S. Paint all surfaces and building system components above ceiling grid line in single color, contrasting with grid, in system complying with schedule for specific surface or component.

### 3.5 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint shop primed equipment.
- B. Do not paint factory finished mechanical and electrical equipment, except those exposed to view in non-utility areas. Paint factory prefinished items exposed to view in non-utility areas with color as directed by Architect.
- C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- D. At interior and exterior applications, prime and paint exposed and insulated pipes, conduit, boxes, exposed and insulated ducts, mechanical equipment units, hangers, brackets, collars and supports, except where items are prefinished.
- E. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- F. At all locations where new exposed duct work is to be painted, Contractor shall paint duct work at floor level prior to installing on wall. Once painted, protect duct work from overspray and other construction related debris. Ductwork finish shall be smooth and without blemishes. Once installed, carefully touchup any areas scratched during install.
- G. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels, except fire dampers.
- H. Paint exposed panels, pedestals, boxes, conduit and related electrical equipment occurring in exterior and interior finished areas.

- I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

### 3.6 CLEANING

- A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.
- B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. At end of workday remove from building flammable paint, solvents, and reducing agents.
- D. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.
- E. Upon completion of the work of this section, remove all surplus material and related debris from the site.

3.7 SCHEDULE - GENERAL REQUIREMENTS:

- A. For ease of specifying, unless otherwise noted, product numbers of Sherwin-Williams have been used.
  - 1. Basis of Design Manufacturers - Paint:
    - a. Basis of Design – Paints, Sherwin-Williams
  - 2. Acceptable Paint Manufacturers – See Paragraph 2.1, this Section, for acceptable alternates. For alternates, a submittal is required showing equivalence to specified products per Section 01 25 13, “Substitution Procedures”
  - 4. Substitutions: Provide per Section 01 25 13, “Substitution Procedures”
- D. Exterior Downspouts shall match the color of adjacent wall surfaces, unless otherwise noted.

### 3.8 SCHEDULE - INTERIOR SURFACES

- A. Descriptions in schedule apply to new and previously painted surfaces. Number of coats listed are a minimum, additional coats may be required to provide suitable uniform finish.
- B. **New Gypsum Board Walls and Soffits** at classrooms, offices, storage rooms, etc. (non “wet” type spaces) - Low Sheen/Eggshell Paint Finish:
1. Prep as described in Paragraph 3.2 H in this Section.
  2. One coat: SW ProMar 200 Zero Primer B28W02600.  
Product Website: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650259195&language=E>
  3. Two coats: SW ProMar 200 Zero VOC Interior EG.  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777263020/>
- C. **New Gypsum Board Ceilings** at classrooms, offices, storage rooms, etc. (non “wet” type spaces) - Flat Finish:
1. Prep as described in Paragraph 3.2 H in this Section.
  2. One coat: SW ProMar 200 Zero Primer B28W02600 .  
Product Website Link: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650259195&language=E>
  3. Two coats: SW ProMar 400 Zero VOC Interior Flat B30 Series.  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777104361/>
- D. **New Gypsum Board Walls, Soffits Ceilings** at toilet rooms, locker rooms, kitchens, custodian rooms, and similar “wet” spaces – Semi-Gloss Paint Finish:
1. Prep as described in Paragraph 3.2 H in this Section.
  2. One coat: SW ProMar 200 Zero Primer B28W02600 .  
Product Website Link: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650259195&language=E>
  3. Two coats: SW ProMar 200 Zero HP Semi-Gloss Enamel B31 Series.  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777858677/>
- E. **Existing Gypsum Board Walls & Soffits** at classrooms, offices, storage rooms, etc. – Low Sheen/Eggshell Paint Finish:
1. Prep as described in Paragraphs 3.2 A-G & H in this Section.
  2. One Coat: SW Multi-Purpose Primer B51W00450,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777101117/>

3. Two Coats: SW ProMar 200 Zero VOC Interior Low Sheen. B41 Series

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777263020/>

F. **Existing Gypsum Board Ceilings** at classrooms, offices, storage rooms, etc. (non “wet” type spaces) - Flat Finish:

1. Prep as described in Paragraphs 3.2 A-F & H in this Section.
2. One Coat: SW Multi-Purpose Primer B51W00450,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777101117/>

Or, if heavily stained – SW Quick Dry Stain Blocking Primer B51,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777146392/>

3. Two coats: SW ProMar 400 Zero VOC Interior Flat B30 Series

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777104361/>

G. **Existing Gypsum Board Walls and Ceilings** at toilet rooms, locker rooms, kitchens, custodian rooms, and similar “wet” spaces – Semi-Gloss Paint Finish:

1. Prep as described in Paragraphs 3.2 A-F & H in this Section.
2. One Coat: SW Multi-Purpose Primer B51W00450,

Product Website Link: SW Multi-Purpose Primer B51W00450Or, if heavily stained - SW Quick Dry Stain Blocking Primer B51,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777146392/>

3. Two coats: SW ProMar 200 HP Semi-Gloss B31.

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777858677/>

H. **Acoustical Ceiling Tiles**, Where painting is indicated – Flat:

1. One Coat: SW Multi-Purpose Primer B51W00450,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777146392/>

Or, if heavily stained - SW Quick Dry Stain Blocking Primer B51,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777146392/>

2. Two coats: SW ProMar 400 Zero Flat B30 Series

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777104361/>

**I. Wall Preparation For Vinyl Wall Coverings:**

1. One Coat Sealer: ZINSSER SHIELDZ Universal Wallcovering Primer

Product Website Link: <https://www.rustoleum.com/product-catalog/consumer-brands/zinsser/wallpaper-primers/shieldz-universal-wallcovering-primer/>

**J. Interior Non-Galvanized Metal - Doors and Frames, Ferrous Metal Piping, Structural Steel, Miscellaneous Metal Fabrications, and Related Components:**

1. Prep per Paragraphs 3.2 A-G, K, M, & N this Section.
2. One Coat: SW Pro Industrial DTM Primer Finish B66

Product Website Link: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650023591&language=E>

3. Two Coats: Pro Industrial Acrylic SG B66 Series.

Product Website Link: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650023591&language=E>

4. Note: Interior structural steel and miscellaneous metal fabrications shall be shop-primed as described above and included in the scope of work for the following sections:
  - a. Section 05 12 00 - Structural Steel
  - b. Section 05 50 00 - Metal Fabrications
  - c. Section 08 11 13 - Hollow Metal Doors and Frames

**K. Interior Galvanized and Zinc Alloy Metal - Semi-Gloss Enamel:**

1. Prep per Paragraph 3.2 L, this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

Product Website Link: [https://www.rustoleum.com/~media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19\\_Metal\\_Clean\\_and\\_Etch\\_TDS.ashx](https://www.rustoleum.com/~media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx)

3. One Coat: SW ProCryl Universal Primer B66-310,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777354971/>

4. Two Coats: Pro Industrial Acrylic SG B66 Series

Product Website Link: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650023591&language=E>

**L. Interior Cement Plaster and Interior Exposed Concrete - Semi-Gloss at Walls and Flat at Ceilings, Enamel:**

1. Prep per Paragraphs 3.2 A-G & I, this Section.
2. One Coat: SW Loxon Concrete & Masonry Primer LX02,  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777637845/>
3. Two Coats: SW ProMar 200 Zero VOC Interior Semi-Gloss B31  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777005286/>

**M. Interior Concrete Block - Semi-Gloss:**

1. Prep per Paragraphs 3.2 A-F, this Section.
2. One Coat: PrepRite Block Filler B51,  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777143797/>
3. Two Coats: SW ProMar 200 Zero VOC Interior Semi-Gloss B31  
Website: <https://www.sherwin-williams.com/document/PDS/en/035777005286/>

**N. New or Existing Interior Painted Woodwork, Wood Windows and Casework - Semi-Gloss Enamel:**

1. Prep per Paragraphs 3.2 A-F & O this Section.
2. One Coat: SW Multi-Purpose Latex Primer B51 Series,  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777101117/>
3. Two Coats: SW ProMar 200 Zero VOC Interior Semi-Gloss B31
4. Website: <https://www.sherwin-williams.com/document/PDS/en/035777005286/>

**O. Interior Wood to Receive Transparent Finish – Sealer and Lacquer Finish:**

1. Prep per Paragraphs 3.2 A-F this Section.
2. One Coat: Gemini 200-0012 Sanding Sealer  
Product Website Link: <https://www.gemini-coatings.com/wp-content/uploads/2019/12/200-0012.pdf>
3. Two Coats: Gemini 275 Lacquer Sealer  
Website: <https://www.sherwin-williams.com/homeowners/products/gemini-275-voc-lacquer-sealer-pl-9170748>

**P. Interior Stained Wood – Stain With Lacquer Finish:**

1. Prep per Paragraphs 3.2 A-F this Section.
2. One Coat: Minwax Wiping Stain – Color As Selected By Architect  
Product Website Link: <https://www.sherwin-williams.com/painting-contractors/color/find-and-explore-colors/stain-colors/interior-stains/minwax-waterbased-wood-stain-color>
3. Two Coats: 91657 Satin Lacquer - Gemini 275 Lacquer Sealer  
Product Website Link – <https://www.sherwin-williams.com/homeowners/products/gemini-275-voc-lacquer-sealer-pl-9170748>

**Existing Stained Wood - Varnish Finish:**

4. Prep per Paragraphs 3.2 A-F this Section.
5. One Coat: Minwax Wiping Stain - Stain to provide uniform finish, match existing tone  
Product Website Link: <https://www.sherwin-williams.com/painting-contractors/color/find-and-explore-colors/stain-colors/interior-stains/minwax-waterbased-wood-stain-color>
6. Two Coats: Old Masters “Mators Armor” Water Based Polyurethane Satin Finish  
Product Website Link: <https://www.sherwin-williams.com/painting-contractors/color/find-and-explore-colors/stain-colors/interior-stains/minwax-waterbased-wood-stain-color>

### 3.9 SCHEDULE - EXTERIOR SURFACES - PAINT

- A. Descriptions in schedule apply to new and previously painted surfaces. Number of coats listed are a minimum, additional coats may be required to provide suitable uniform finish.
- B. **Exterior Non-Galvanized Ferrous Metal Fabrications** - Steel Doors and Frames, Flashings and Similar Items – Semi-Gloss Enamel:
1. Prep as described in Paragraphs 3.2 A-G, K, M and N in this Section.
  2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch  
Product Website Link: [https://www.rustoleum.com/~media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19\\_Metal\\_Clean\\_and\\_Etch\\_TDS.ashx](https://www.rustoleum.com/~media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx)
  3. One Coat: SW ProCryl Universal Metal Primer B66-310  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777354971/>
  4. Two Coats: Pro Industrial Acrylic SG B66 Series  
Product Website Link: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650023591&language=E>
  5. **Exterior Galvanized Ferrous Metal Fabrications** - Steel Doors and Frames, Flashings and Similar Items – Semi-Gloss Enamel:
  6. Prep as described in Paragraphs 3.2 A-G & L in this Section.
  7. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch  
Product Website Link: [https://www.rustoleum.com/~media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19\\_Metal\\_Clean\\_and\\_Etch\\_TDS.ashx](https://www.rustoleum.com/~media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx)
  8. One Coat: SW ProCryl Universal Metal Primer B66-310  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777354971/>
  9. Two Coats: Pro Industrial Acrylic SG B66 Series  
Product Website Link: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650023591&language=E>
- C. **Exterior Galvanized Metal Railings – Painted**, As Noted In Drawings - Gloss Urethane Enamel:
1. Prep as described in Paragraphs 3.2 A-G & K in this Section.

2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

Product Website Link: <https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/>

3. One Coat SW ProCryl Universal Metal Primer B66-310

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777354971/>

4. Two Coats: Pro Industrial Acrylic SG B66 Series

**D. Exterior Aluminum Panels – Non-primed:**

1. Prep as described in Paragraphs 3.2 A-G in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

Product Website Link: <https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/>

3. One Coat: SW ProCryl Universal Metal Primer B66-310

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777354971/>

4. Two Coats: Pro Industrial Acrylic SG B66 Series

Website: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650023591&language=E>

**E. Exterior Aluminum Panels – Pre-primed:**

1. Prep as described in Paragraphs 3.2 A-G in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

Product Website Link: <https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/>

3. One Coat: Factory Prime coat (Touch up if needed SW B66-310)

4. Two Coats: Pro Industrial Acrylic SG B66 Series

Product Website Link: <https://sherlink2.sherwin.com/sher-link/ViewHearsCountryCodeDoc?type=DP&sku=650023591&language=E>

**F. Exterior Cement Plaster and Exposed Exterior Concrete - Semi-Gloss Enamel:**

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: Loxon Masonry Primer LX02

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777875322/>

3. Two Coats: SW A-100 A08 Series

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777873663/>

**G. New Concrete Block - Semi-Gloss:**

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: SW PrepRite Block Filler B51 Series

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777218587/>

3. Two Coats: SW A-100 A08 Series

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777873663/>

**H. Existing Concrete Block - Semi-Gloss:**

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: SW PrepRite Block Filler B51 Series,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777218587/>

3. Two Coats: SW A-100 A08 Series

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777873663/>

**I. Cementitious Siding and Soffits - Flat:**

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: SW Multi-Purpose Latex Primer B51,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777101117/>

3. Two Coats: A-100 Exterior Flat A-06

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/03577781333/>

**J. Exterior Wood, Wood Windows, Etc. – Painted -Semi-Gloss:**

1. Prep as described in Paragraphs 3.2 A-F & O in this Section.
2. One Coat: SW Multi-Purpose Latex Primer B51,

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777101117/>

3. Two Coats: SW A-100 A-8 Series

Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777873663/>

### 3.10 SCHEDULE - EXTERIOR SURFACES – HIGH PERFORMANCE COATINGS

- A. For items having “High Performance Coatings” as noted in drawings, including:
1. **Exposed Exterior Metal Galvanized Ferrous Metal** - Flat Sheet Panels, Steel Canopy Members, Miscellaneous Metal Fabrications, and Related Components With High Performance Coating:
  2. Prep as described in Paragraphs 3.2 A-G, K, & M in this Section.
    - a. One coat: Pro Industrial Pro Cryl Metal Primer B66-310.  
Product Website Link: <https://www.sherwin-williams.com/document/PDS/en/035777354971/>
    - b. Two coats: SW Pro Industrial Multi Surface Acrylic B66 Series.  
Product Website Link - <https://www.sherwin-williams.com/document/PDS/en/035777897324/>
  3. **Exterior Non-Galvanized Metal** - Structural Steel, Canopies and Trellises, Metal Fabrications and Other Non-Galvanized Metal Fabrications With High Performance Coating
    - a. Prep as described in Paragraphs 3.2 A-G, & L in this Section.
    - b. Shop or Field Primer: SW Macropoxy 646 Primer Finish  
Product Website Link - <https://www.paintdocs.com/docs/webPDF.jsp?SITEID=SWPCGPROT&doctype=PDF&prodno=035777365441&lang=2>
    - c. Finish Coat: SW Pro Industrial High Solids Polyurethane 100  
Product Website Link - <https://datasheets.globalspec.com/ds/3476/SherwinWilliamsProtectiveMarineCoatings/3E6916F9-3127-4090-9E4F-57C5B3574647>
  4. Note: Exterior structural steel and metal fabrications with high performance coatings shall be shop primed per the requirements in this section included in the scope of work for the following sections:
    - a. Section 05 12 00 - Structural Steel
    - b. Section 05 12 13 - Architecturally Exposed Structural Steel
    - c. Section 05 50 00 - Metal Fabrications
    - d. Section 07 42 13.16 - Metal Plate Wall Panels

**END OF SECTION**